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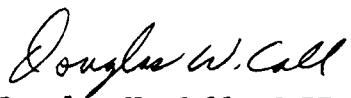
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## PHOTO REFERENCE TARGET ARRAY SCHEME

### INTRODUCTION

This technical note documents NAVBIODYNLAB's numbering and pattern conventions for reference target arrays. The reference target location and orientation identifies displacement within a coordinate system. Targets used within the coordinate system may be from one to five sided depending upon the application and location. (See Figure 1)

Target orientation predictions are necessary when the target (X-1) center is not visible from a specific theodolite position. Target supports are machined to close tolerances with parallel sides and the target face center accurately marked. Theodolites are used to locate the position of each corner, allowing calculation of each target's center even when the target is not visible.

### TARGET PATTERN DESIGNATION

Solid black and white patterns in alternate quadrants are joined to patterns on adjacent sides so that the patterns alternate on each side. (See Figure 1)

### DESIGNATION OF TARGET SIDES

Due to the various mounting orientations, permanent designations are not given to the photo reference target sides. These designations are determined as follows: S1 designates the side which most nearly faces down (90° depression), S2 the side most nearly facing up (90° elevation), S3 the side most nearly facing 0 degrees of azimuth within the coordinate system; and the other sides are designated clockwise in sequence S4, S5 and S6 around the axis through S1-S2. The side used to mount the target follows normal designation protocol but is eliminated from the designations recorded.

### DESIGNATION OF TARGET CENTERS

The center of a target side is designated by using "X1" with the designation of that side. For example, "S1X1" designates the target center of target S1.

### DESIGNATION OF TARGET CORNERS

Target corners of a cube target are identified for calculating target orientation. Corners are numbered starting with S2. On S2 the corners are designated in a clockwise direction with C1 being at 45 degrees, C2 at 135 degrees, C3 at 225 degrees, and C4 at 315 degrees. The S1 side corners opposite the corners of S2 are designated as C5 at 45 degrees, C6 at 135 degrees, C7 at 225 degrees, and C8 at 315 degrees.

Single faced targets use the same numbering convention, dependent on the target orientation in the coordinate system. If a single faced target is at 90 degrees azimuth in the coordinate system, the target would be designated as S4 with corners designated C1, C5, C6, and C2 in a clockwise direction (See Figure 1, Oblique View). Beginning with the first target corner, with the target facing 180 degrees azimuth in the coordinate system, the target would be designated as S5 with corners designated in sequence C2, C6, C7 and C3.

Any variations from this standardized convention should be fully documented for each test.

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## TARGET NUMBERING AND PATTERN SCHEME

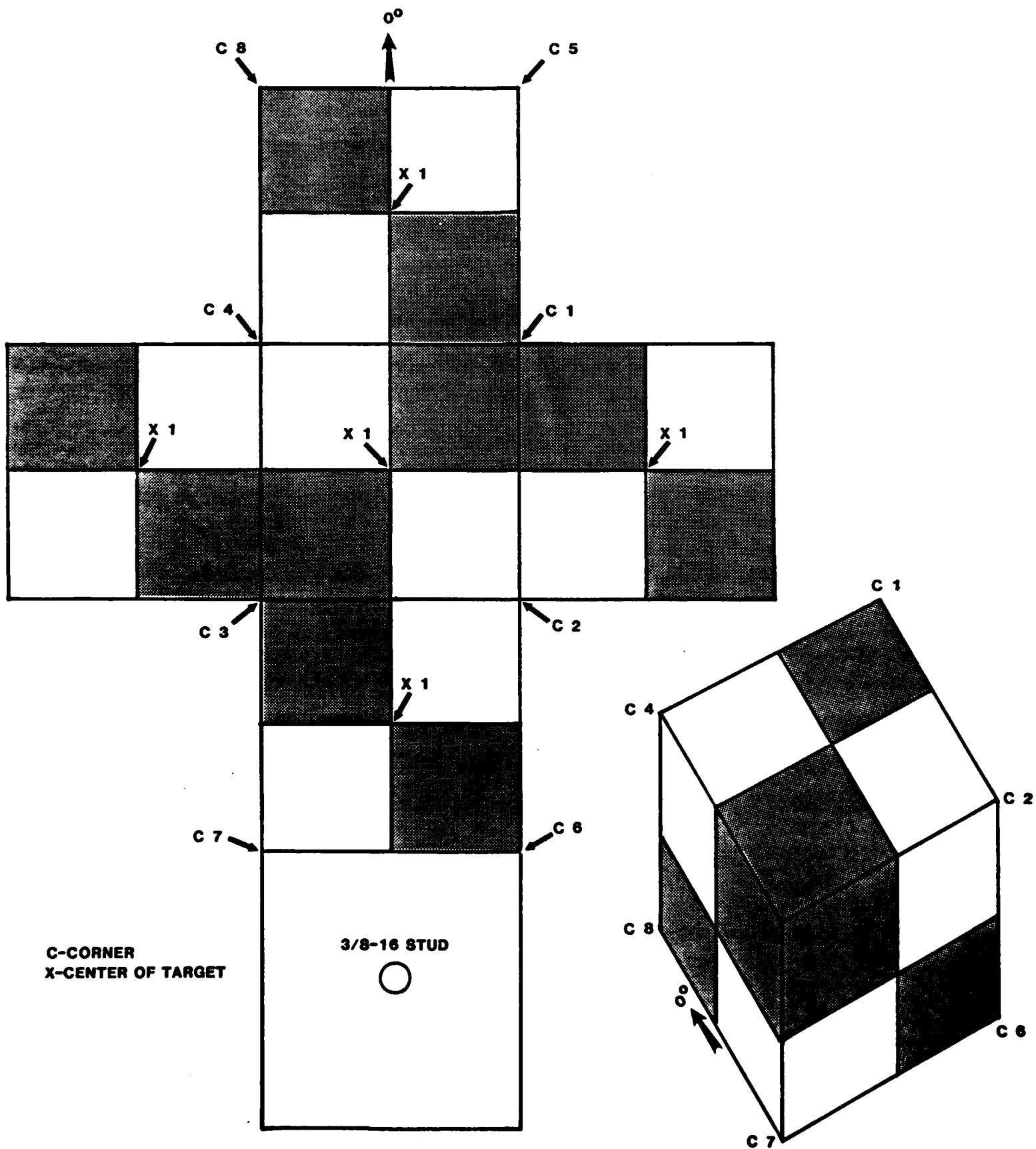


Figure 1